

IN THE CLAIMS:

Please amend claims 14, 21-24, 34, 37, 38, and 41-43, and cancel claims 1-13, 16-20, 29-33, 36, 39-40, and 44-46 as follows:

1-13 (Cancelled)

14. (Currently Amended) An apparatus as defined in ~~claim 14~~ claim 21, wherein said layer 3 flow is in accordance with one of IP and IPX protocols.

15. (Previously Presented) An apparatus as defined in claim 14, wherein said layer 2 flow is in accordance with all protocols except IP and IPX.

16-20 (Cancelled)

21. (Currently Amended) ~~An apparatus as defined in claim 20,~~

An apparatus for forwarding packets between ports, said ports including a first port associated with a first host having a first layer 2 address and a first layer 3 address, and a second port associated with a second host having a second layer 2 address and a second layer 3 address, a layer 2 flow of packets between said first and second hosts being based on said first and second layer 2 addresses, a layer 3 flow of packets between said first and second hosts being based on said first and second layer 3 addresses, said apparatus comprising:

a flow table comprising a plurality of address resolution records stored in an address resolution record table including:

a first address resolution record that corresponds said first port with said first layer 2 address,

a second address resolution record that corresponds said first port with said first layer 3 address,

a third address resolution record that corresponds said second port with said second layer 2 address, and

a fourth address resolution record that corresponds said second port with said second layer 3 address, wherein said first and second hosts have first and second sockets, respectively, said layer 3 flow being further based on said first and second sockets, said second address resolution record further corresponding said first port with said first socket, said fourth address resolution record further corresponding said second port with said second socket;

a switch module coupled to said ports and said flow table that detects said layer 2 flow arriving at one of said first and second ports, and forwards packets belonging thereto to the other of said first and second ports based on said first and third address resolution records, said switch module also detecting said layer 3 flow arriving at one of said first and second ports, and forwards packets belonging thereto to the other of said first and second ports based on said second and fourth address resolution records;

a CPU coupled to said flow table and communicating with said switch module, said CPU creating said first, second, third and fourth address resolution records in said address resolution record table;

a switch engine that determines whether said first and third address resolution records exist in said address resolution record table when said first flow is detected, and whether said second and fourth address resolution records exist in said address resolution record table when said second flow is detected; and

a CPU interface that sends a first message to said CPU when said first flow

is detected and said switch engine determines that said first and third address resolution records do not exist in said address resolution record table, said CPU interface sends a second message to said CPU when said second flow is detected and said switch engine determines that said second and fourth address resolution records do not exist in said address resolution record table, said CPU creating said first and third address resolution records in response to said first message, and said second and fourth address resolution records in response to said second message, wherein said flow table further includes an address resolution hash table comprising a plurality of address resolution hash records including:

a first address resolution hash record that corresponds a portion of said first layer 2 address with said first address resolution record;

a second address resolution hash record that corresponds a portion of said first layer 3 address with said ~~first~~ second address resolution record;

a third address resolution hash record that corresponds a portion of said second layer 2 address with said third address resolution record; and

a fourth address resolution hash record that corresponds a portion of said second layer 3 address with said fourth address resolution record,

said switch module accessing said first, second, third and fourth address resolution records in accordance with said corresponding portions of said addresses and said first, second, third and fourth address

resolution record hash records, respectively,

said CPU linking said first and third address resolution hash records with said first and third address resolution records, respectively, in response to said first message, and linking said second and fourth address resolution hash records with said second and fourth address resolution records, respectively, in response to said second message.

22. (Currently Amended) An apparatus as defined in ~~claim 14~~ claim 21, wherein said switch module is comprised of an ASIC.

23. (Currently Amended) An apparatus as defined in ~~claim 14~~ claim 21, wherein said switch module and said flow table are together comprised of an ASIC.

24. (Currently Amended) An apparatus as defined in ~~claim 14~~ claim 21, wherein said first and second hosts belong to different networks.

25. (Previously Presented) A method of forwarding packets between ports of a switch, said ports being associated with hosts having addresses, said method comprising:

identifying a first address of a first one of said hosts;

identifying a first port associated with said first host;

creating a record that corresponds said first address with said first port;

storing said record in a table;

linking said record to a hash;

associating said hash with a portion of said first address;

receiving a data packet at a second port;

extracting said first address from said data packet;

retrieving said record by hashing onto said table using said portion of said first

address; and

forwarding said data packet to said first port in accordance with said record;

corresponding a swap address with said record;

receiving a second data packet at a third port;

routing said second data packet by forwarding said second data packet to said third port in accordance with said record and swapping a second address, the second address within said second data packet, with said swap address in accordance with said record.

26. (Cancelled)

27. (Previously Presented) A method as defined in claim 25, further comprising:

identifying a third address of a second one of said hosts, said second port associated with said second host;

creating a second record that corresponds said third address with said second port;

storing said second record in said table;

linking said second record to said hash;

associating said hash with a portion of said third address;

sorting said first and second records in said table based on said first and third addresses;

receiving a third data packet at the first port;

extracting said third address from said third data packet;

retrieving said second record by hashing onto said table using said portion of said third address and searching among said first and second records based on said third

address; and

forwarding said third data packet to said second port in accordance with said second record.

28. (Original) A method as defined in claim 25, wherein said second port is associated with a second one of said hosts, said first and second hosts belonging to different networks.

29-33 (Cancelled)

34. (Currently Amended) A method as defined in ~~claim 32~~ claim 37, wherein said layer 3 flow is in accordance with one of IP and IPX protocols.

35. (Previously Presented) A method as defined in claim 34, wherein said layer 2 flow is in accordance with all protocols except IP and IPX.

36 (Cancelled)

37. (Currently Amended) ~~A method as defined in claim 33,~~

A method of forwarding packets between ports of a switch, said ports including a first port associated with a first host having a first layer 2 address and a first layer 3 address, and a second port associated with a second host having a second layer 2 address and a second layer 3 address, a layer 2 flow of packets between said first and second hosts being based on said first and second layer 2 addresses, a layer 3 flow of packets between said first and second hosts being based on said first and second layer 3 addresses, said method comprising:

preparing a first address resolution record in a flow table that corresponds said first port with said first layer 2 address;

preparing a second address resolution record in said flow table that

corresponds said first port with said first layer 3 address;

preparing a third address resolution record in said flow table that

corresponds said second port with said second layer 2 address ;

preparing a fourth address resolution record in said flow table that

corresponds said second port with said second layer 3 address;

detecting said layer 2 flow arriving at one of said first and second ports and

forwarding packets belonging thereto to the other of said first and second ports based on

said first and third address resolution records;

detecting said layer 3 flow arriving at one of said first and second ports, and

forwarding packets belonging thereto to the other of said first and second ports based on

said second and fourth address resolution records;

determining whether said first and third address resolution records exist in

said flow table when said layer 2 flow is detected;

determining whether said second and fourth address resolution records

exist in said flow table when said layer 3 flow is detected;

creating said first and third address resolution records when said layer 2

flow is detected and when it is determined that said first and third address resolution

records do not exist in said flow table;

creating said second and fourth address resolution records when said layer

3 flow is detected and when it is determined that said second and fourth address

resolution records do not exist in said flow table;

preparing a first address resolution hash record in said flow table that

corresponds a portion of said first layer 2 address with said first address resolution record;

preparing a second address resolution hash record in said flow table that corresponds a portion of said first layer 3 address with said first address resolution record;

preparing a third address resolution hash record in said flow table that corresponds a portion of said second layer 2 address with said third address resolution record;

preparing a fourth address resolution hash record in said flow table that corresponds a portion of said second layer 3 address with said fourth address resolution record;

linking said first and third address resolution hash records with said first and third address resolution records, respectively, when said ~~first-flow~~ layer 2 flow is detected and when it is determined that said first and third address resolution records do not exist in said flow table ~~in response to said first message~~; and

linking said second and fourth address resolution hash records with said second and fourth address resolution records, respectively, when said ~~second-flow~~ layer 3 flow is detected and when it is determined that said second and fourth address resolution records do not exist in said flow table.

38. (Currently Amended) A method as defined in claim 37, wherein said step of forwarding said packets belonging to said ~~first-flow~~ layer 2 flow includes accessing said first and third address resolution records in accordance with said corresponding portions of said addresses and said first and third address resolution record hash records, respectively, and wherein said step of forwarding said packets belonging to said ~~second-flow~~ layer 2 flow includes accessing said second and fourth address resolution records in accordance with said corresponding portions of said addresses and said second and



fourth address resolution record hash records, respectively.

39-40 (Cancelled)

41. (Currently Amended) ~~A method as defined in claim 40,~~

A method of forwarding packets between ports of a switch, said ports including a first port associated with a first host having a first layer 2 address and a first layer 3 address, and a second port associated with a second host having a second layer 2 address and a second layer 3 address, a layer 2 flow of packets between said first and second hosts being based on said first and second layer 2 addresses, a layer 3 flow of packets between said first and second hosts being based on said first and second layer 3 addresses, said method comprising:

preparing a first address resolution record in a flow table that corresponds said first port with said first layer 2 address;

preparing a second address resolution record in said flow table that corresponds said first port with said first layer 3 address;

preparing a third address resolution record in said flow table that corresponds said second port with said second layer 2 address ;

preparing a fourth address resolution record in said flow table that corresponds said second port with said second layer 3 address;

detecting said layer 2 flow arriving at one of said first and second ports and forwarding packets belonging thereto to the other of said first and second ports based on said first and third address resolution records;

detecting said layer 3 flow arriving at one of said first and second ports, and forwarding packets belonging thereto to the other of said first and second ports based on

said second and fourth address resolution records, wherein said first and second hosts have first and second sockets, respectively, said layer 3 flow being further based on said first and second sockets, said second address resolution record further corresponding said first port with said first socket, said fourth address resolution record further corresponding said second port with said second socket;

determining whether said first and third address resolution records exist in said flow table when said layer 2 flow is detected;

determining whether said second and fourth address resolution records exist in said flow table when said layer 3 flow is detected;

creating said first and third address resolution records when said layer 2 flow is detected and when it is determined that said first and third address resolution records do not exist in said flow table;

creating said second and fourth address resolution records when said layer 3 flow is detected and when it is determined that said second and fourth address resolution records do not exist in said flow table;

preparing a first address resolution hash record in said flow table that corresponds a portion of said first layer 2 address with said first address resolution record;

preparing a second address resolution hash record in said flow table that corresponds a portion of said first layer 3 address with said first address resolution record;

preparing a third address resolution hash record in said flow table that corresponds a portion of said second layer 2 address with said third address resolution record;

preparing a fourth address resolution hash record in said flow table that

corresponds a portion of said second layer 3 address with said fourth address resolution record;

linking said first and third address resolution hash records with said first and third address resolution records, respectively, when said ~~first flow~~ layer 2 flow is detected and when it is determined that said first and third address resolution records do not exist in said flow table ~~in response to said first message~~; and

linking said second and fourth address resolution hash records with said second and fourth address resolution records, respectively, when said ~~second flow~~ layer 3 flow is detected and when it is determined that said second and fourth address resolution records do not exist in said flow table.

42. (Currently Amended) A method as defined in claim 41, wherein said step of forwarding said packets belonging to said ~~first flow~~ layer 2 flow includes accessing said first and third address resolution records in accordance with said corresponding portions of said addresses and said first and third address resolution record hash records, respectively, and wherein said step of forwarding said packets belonging to said ~~second flow~~ layer 3 flow includes accessing said second and fourth address resolution records in accordance with said corresponding portions of said addresses and said second and fourth address resolution record hash records, respectively.

43. (Currently Amended) A method as defined in ~~claim 32~~ claim 41, wherein said first and second hosts belong to different networks.

44-46 (Cancelled)